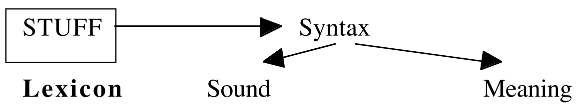
No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon

Alec Marantz

Most contemporary theories of grammar assume a general organization in which elementary constituents are drawn from a place called the "Lexicon" for composition in the syntax, as in (1).

(1)



(Pure) **Lexicon**: place from which items are drawn for the syntax; the source of items used by the computational system of syntax

While it is uncontroversial that our knowledge of language includes a list of atomic elements for syntactic composition, the "Lexicalist" position is of course associated with a stronger claim about the source of building blocks for syntax, as given in (2).

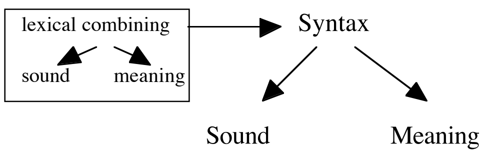
(2) **Lexicalism**: words are created in the Lexicon, by processes distinct from the syntactic processes of putting morphemes/words together. Some phonology and some structure/meaning connections are derived in the lexicon, while other aspects of phonology and other aspects of structure/meaning relations are derived in (and after) the syntax.

So Lexicalism claims that the syntax manipulates internally complex words, not unanalyzable atomic units. The leading idea of Lexicalism might be summarized as follows: Everyone agrees that there has to be a list of sound/meaning connections for the atomic building blocks of language (=the "morphemes"). There also has to be a list of idiosyncratic properties associated with the building blocks. Perhaps the storage house of sound/meaning connections for building blocks and the storage house of idiosyncratic information associated with building blocks is the same house. Perhaps the distinction between this unified storage house and the

U. Penn Working Papers in Linguistics, Volume 4.2, 1997

computational system of syntax could be used to correlate and localize various other crucial distinctions: non-syntax vs. syntax, "lexical" phonological rules vs. phrasal and everywhere phonological rules, unpredictable composition vs. predictable composition.... Syntax is for the ruly, the lexicon for the unruly (see, e.g., Di Sciullo and Williams 1987). The Lexicalist view of the computational Lexicon may be pictured as in (3), where both the Lexicon and the Syntax connect sound and meaning by relating the sound and meaning of complex constituents systematically to the sounds and meanings of their constituitive parts.

(3)



The underlying suspicion behind the leading idea of Lexicalism is this: we know things about words that we don't know about phrases and sentences; what we know about words is like what we would want to say we know about (atomic) morphemes. This paper brings the reader the following news: Lexicalism is dead, deceased, demised, no more, passed on.... The underlying suspicion was wrong and the leading idea didn't work out. This failure is not generally known because no one listens to morphologists. Everyone who has worked on the issues of domains—what are the domains for "lexical phonological rules," what are the domains of "special meanings," what are the domains of apparently special structure/meaning correspondences—knows that these domains don't coincide in the "word," and in fact don't correlate (exactly) with each other. But the people that work on word-sized domains are morphologists, and when morphologists talk, linguists nap.

The structure of this paper is as follows: we open with a Preface, which might be called, "Distributed Morphology," or "the alternative that allows us to dump lexicalism once and for all." Section 2 explains, "Why special sound, special meaning, and special structure/meaning correspondences don't coincide in the word," i.e., why the major claim of Lexicalist approaches to grammar is wrong. Finally, Section 3 goes back to the alleged source of the

"lexicalist hypothesis," and explains why "Remarks on Nominalization" (Chomsky 1970), rather than launching Lexicalism, provides a knock-down argument against the Lexicon of lexicalism. (I find some of my points in this paper prefigured, in a different but related context, in Schmerling 1983.)

1. Preface: Distributed Morphology

To many, Lexicalism seems inevitable since most well-articulated theories of grammar assume the computational lexicon as in (2). However, the framework of Distributed Morphology (see, e.g., Halle & Marantz 1993) provides an alternative that allows us to consider what a grammar without lexicalist assumptions might look like. Any theory must include one or more lists of atomic elements that the computational system of grammar might combine into larger units. Distributed Morphology explodes the Lexicon and includes a number of distributed, non-computational lists as Lexicon-replacements; the structure of grammar without the (unified) Lexicon might be represented as in (4) below. The first list in (4), List 1 or the "narrow lexicon," most directly replaces the Lexicon as it provides the units that the syntax operates with. This List 1 contains the atomic roots of the language and the atomic bundles of grammatical features. For present purposes, it is not important whether or not roots in this list carry or are identified by their phonological forms—this issue of the "late insertion" of roots may be separated from other issues in the organization of grammar (see Marantz 1993 for discussion of "late insertion"). The sets of grammatical features are determined by Universal Grammar and perhaps by language-particular (but language-wide) principles. Since these sets are freely formed, subject to principles of formation, List 1 is "generative."

(4) structure of grammar

List 1 ---> Computational system (Syntax)

List 2 ---> Phonology LF

Phonetic interface Semantic interface <--- List 3

(Computational System = "merge and move")

The second list in (4), List 2 or the "Vocabulary," provides the phonological forms for the terminal nodes from the syntax (for roots as well as bundles of grammatical features, unless roots come with their phonological forms from the narrow lexicon). The Vocabulary includes the connections between sets of grammatical features and phonological features, and thus determines the connections between terminal nodes from the syntax and their phonological realization. The Vocabulary is non-generative but expandable. The Vocabulary items are underspecified with respect to the features of the terminal nodes from the syntax; they compete for insertion at the terminal nodes, with the most highly specified item that doesn't conflict in features with the terminal node winning the competition. As Anderson (1992) argues, correctly, against lexicalist approaches to inflectional morphology such as Lieber's (1992), the grammatical underspecification of the phonological realizations of morphemes prevents one from constructing inflected forms via combination of morphemes and percolation of features (see the discussion in Halle and Marantz 1993).

The final Lexicon replacement in (4) is List 3 or the "Encyclopedia"—the list of special meanings. The Encyclopedia lists the special meanings of particular roots, relative to the syntactic context of the roots, within local domains (as described below). As with the Vocabulary, the Encyclopedia is non-generative but expandable.

It is an important and open question how much information about roots is present in the narrow Lexicon (e.g., does the narrow lexicon contain sufficient information to identify particular roots or does it contain only information about classes of roots, of the sort discussed in section 3 below), whether the phonological

forms of roots are among the Vocabulary items, and whether and how the particular choice of root from the narrow Lexicon or from the Vocabulary feeds semantic interpretation. The issue of whether root morphemes, like all grammatical morphemes, are subject to "late insertion" (post-Syntactic insertion) is orthogonal to the question of whether or not there's a computational lexicon (i.e., there isn't any such thing as a computational lexicon regardless). (For further discussion of the late insertion of roots, see Marantz (in preparation).)

To imagine a theory in which the grammar constructs all words in the syntax by the same general mechanisms ("merge and move"; see Chomsky 1995) that construct phrases, it is useful to make the natural assumption that whether you get a "zero-level category" (word-like unit) or a phrasal category by merging two constituents is a function of the (categories of the) constituents involved, not of the "merger" operation itself. That is, there is no reason not to build words in the syntax via "merger" (simple binary combination) as long as there are no special principles of composition that separate the combining of words into phrases from the combining of morphemes into words.

2. Why special sound, special meaning, and special structure/meaning correspondences don't coincide in the word

Recall that the claim of Lexicalism is the claim of special status for word-sized units, i.e., that the same units that serve as the basic elements of syntactic composition also serve as the domain for something else. In this section, we reject the proposed correlation of word units with a variety of possible "elses": special sound, special meaning, or special structure/meaning correspondences.

2.1. Special sound: Lexicon as locus of prosodic words or of "lexical phonological rules"

To begin, let's assume that units of various size play a role in the phonology (see, e.g., prosodic phonology). Let's assume in addition that one such unit is the "phonological word" (=Word) and that within each theory that anyone discusses, it is fairly well understood

what the "lexical" units needed by the syntax are (=Lexical Items). Under these assumptions, Lexicalism claims that Words are Lexical Items, i.e., that some unit of phonological importance corresponds to the basic unit of syntactic composition. However, within lexical phonology and morphology, no one has ever argued that the Words coincide with the Lexical Items (i.e., as a matter of empirical fact, in cases where some issue might arise). The general lesson from studies in prosodic phonology is that syntactic structure isn't identical to prosodic structure at any level, including the Word level (i.e., it is always necessary to *construct* prosodic structure from syntactic structure (or "map" syntactic structure onto prosodic structure)).

Although Lexical Items might not be phonological Words, they still might serve as phonological units if they were the proper domain of a particular set of phonological rules, the "lexical phonological rules" (characterized at least by the possibility of morphological triggers and exceptions). Where the issue of whether "lexical phonology" applies only within Lexical Items is discussed, the evidence suggests that the Lexical Item is often too small a unit for lexical phonology (see Hayes 1990). I suspect that careful analysis might prove that the Lexical Item is sometimes too big a domain for lexical phonology as well, i.e., that syntactic zero-level units sometimes include domains for post-lexical phrasal phonology.

However, for the sake of argument, let's suppose that the Lexical Item actually proved to be the proper domain for lexical phonological rules, if such a class of rules exist. Even if this were the case, all phonology (including the "lexical" phonology) could be done after the syntax, and there wouldn't be any reason to construct Words in the lexicon (as storage house of items to be used in the syntax). For the Lexicalists' computational lexicon to be supported, one would need to show that the Word corresponds to some special domain relevant to the syntax and LF—e.g., relevant to special meanings and/or special sound/meaning correspondences.

2.2. Special meaning: Lexicon as locus of idiosyncratic "word" knowledge

The idea here for Lexicalism is that the lexicon provides sound/meaning correspondences for word-size units while the syntax

provides such correspondences for constructions made of words. There is a continuum between the meanings of atomic morphemes and, at least, derivationally derived words that ends abruptly at the word level. So words can have special meanings of the sorts that roots might have, but syntactically derived structures must have meanings predictable from the meanings of their parts and of their internal structures.

To assess this idea, one must ask whether the special meanings of (phrasal) "idioms" are different from the special meanings of derived words (e.g., "transmission"). The Lexicalist predicts special meanings of words must be truly special, and not equivalent to idiomatic meanings of combination of words. However, as Jackendoff (1996) reminds us recently, there is no sharp divide between the special meanings of words and the special meanings of phrases, nor has there been any systematic attempt to argue otherwise. Idiomatic structures ranging from "light verb" constructions like those in (5) to "The shit hit the fan" show the same properties of special meanings for roots in context as do derived words.

(5) a. Take a leap
b. Take a leak
c. Take a piss
d. Take a break
e. Take five
f. Take cover, issue, heart, over, up, down.......

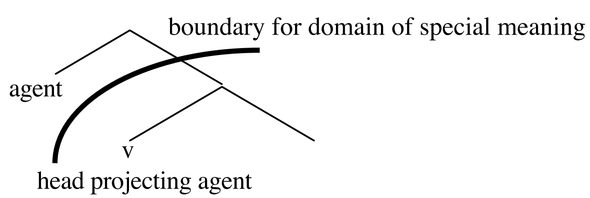
That there is no sharp divide between word and phrasal special meanings is absolutely and obviously true. But somehow this fact has not much bothered lexicalist theory. The lack of impact of this fundamental truth seems related to the problem of drawing conclusions from unprincipled behavior. If a structure of any size can mean anything, in an "idiom," there doesn't seem much here to hang an argument on. So, Jackendoff, for example, proposes expanding the lexicon to include idiomatic phrases. Special meanings of words don't argue, per se, for a lexicon, but special meanings of phrases don't seem to argue against one.

However, we can make a much stronger argument from special meanings against the special status of words. Because it's not true that a structure of any size can mean anything. Rather,

roots may have special meanings (actually, they *must* have "special" meanings since they're defined as the elements whose meanings are not completely determined by their grammatical features) in the (syntactic) context of other elements **within a locality domain**. The locality domains for special meanings are defined syntactically. Since phonological word structure is created post-syntactically (see (4) above), and many functional heads and grammatical morphemes may be packaged inside a single phonological word, these locality domains may sometimes be smaller than a (phonological) word, meaning that some words, like some phrases, **cannot** have special meanings—can't be "idioms."

In point of fact, the locality domains for special meanings do cut across the Word, sometimes carving out structures smaller than the Word, sometimes bigger. I haven't yet figured out anything like the complete theory of locality for special meanings, but I have discovered that the literature has already argued conclusively for one boundary of such domains: The syntactic head that projects agents defines a locality domain for special meanings. Nothing above this head may serve as the context for the special meaning of any root below this head, and vice versa.

(6)



Identifying the head that projects an agent as the boundary for the domains of special meanings makes several predictions that already have been supported by empirical studies:

(7) a. No idioms with fixed agents
(root in agent position, context for special meaning within the VP)

b. No eventive-passive idioms, but possible non-eventive stative idioms

c. No idioms with causative morpheme and lower agentive verb, but possible idioms with causative and lower non-agentive verb

The first prediction in (7a) is a more refined version of a claim made in Marantz (1984) about the non-existence of idioms with fixed external arguments but varying internal arguments. The true generalization is that idioms can't include ("fixed") agentive pieces. So, "The shit hit the fan," must be non-agentive since "the shit" is a fixed part of the idiom. This follows from (6) because, for an idiom to include a fixed agent, the root material in the agent phrase would be getting a special meaning (from the Encyclopedia) in the context of some structure or material below the head that projects the position for the agent—i.e., across a locality barrier for determination of special meaning.

The second prediction (7b) is verified by the literature on differences between so-called "adjectival passives" and "syntactic passives." These differences follow from a structural difference rather than a difference between "lexical" and "syntactic" derivation. The "adjectival"—really, stative—passives are created with a functional head merging below the head that projects agents, while eventive, agentive passives are formed with a functional head merging above (or as) the head which projects agents.

The observation that verbs passive in form can be idioms (or part of idioms) only if they are stative, not if they are eventive, was made for English and French by Ruwet (1991). Some French examples of stative passive idioms are given in (8) (from Ruwet). No such idioms exist with eventive readings.

(8) a. Chaque chose à sa place, et les vaches seront bien gardées.
'Each thing in its place and everything will be OK.'
b. Cet argument est tiré par les cheveux.
'This argument is far-fetched (lit. pulled by the hairs).'

The same difference between passives and statives is noted by Dubinsky and Simango (1996) for Chichewa, as exemplified in (9). Again, statives may be idiomatic, but eventive passives may not be. Unlike French and English, Chichewa uses different vocabulary items for passives and statives, i.e., different suffixes.

(9) a. Chimanga chi- ku- gul -idwa ku-msika.
corn AGR-PROG-buy-PASS at-market
'Corn is being bought at the market.'
[no idiomatic reading, and none possible with passive]
b. Chimanga chi- ku- gul -ika ku-msika.
corn AGR-PROG-buy-STAT at-market
'Corn is cheap at the market.'
[idiomatic reading of 'buy' in the context of STAT]
c. Chaka chatha chimanga chi- na- lim -idwa.
year last corn AGR-PROG-cultivate-PASS
'Last year corn was cultivated.'
d. Chaka chatha chimanga chi- na- lim -ika.
year last corn AGR-PROG-cultivate-STAT
'Last year corn was bountiful.'

The Chichewa situation in which a passive verb—which, as a phonological entity, looks just like a stative verb—cannot have a special meaning illustrates how the domain of special meanings may be smaller than a word. Again, **some words may not have special meanings** (as a matter of grammatical principle).

The third prediction (7c) made by identifying the agent-projecting head as a barrier for special meanings is confirmed by Ruwet (1991), who notes for English and French that a causative construction may not be idiomatic unless the lower verb is non-agentive. So the idiomatic expressions in (10a-c) involve non-agentive lower predicates, and something like "make X swim" cannot induce a special reading for the root "swim" that is not present without "make." Some examples of idiomatic causative constructions from French (Ruwet 1991) in (10e,f) show again that the lower predicate must be interpreted as non-agentive.

(10) a. Make oneself scarce
b. Make X over
c. Make ends meet
d. * Make X swim/fly a kite/etc. (only pure causative meaning on top of independent reading of lower VP)
* = no idiomatic reading
e. Marie a laissé tomber Luc.
'Marie dropped Luc like a hot potato.'
f. On lui fera passer le goût du pain.

'They'll kill him (lit. make the taste of bread pass him).'

g. * Marie a laissé/fait V (NP) (à) NP*, with special meaning of "V" not available outside the causative construction, where NP* is an agent

In languages like Japanese, where causative light verbs show up as affixes on the lower verb root, the restriction on domains of special meaning implies that derived causative verbs with agentive root verbs may not have special meaning/be idiomatic. Work by Kuroda (1993), Miyagawa (1995), and Harley (1995) confirms this prediction, as illustrated by the causative idiom in (11a) and the impossible causative idiom in (11b).

(11) a. tob-ase "fly-make" = demote someone to a remote post—direct causative (non-agentive lower VP) with idiomatic reading

b. suw-ase "smoke-make" = make someone smoke—indirect causative (agentive lower VP) and no possible idiomatic reading that isn't present when the root is used independently of *-sase*)

As with the Chichewa passive verbs, the Japanese causative verbs illustrate how words can be blocked from having special meanings, contrary to the major intuition behind Lexicalism.

2.3. Special structure/meaning correspondences: Lexicon as locus of computation with the same function as syntactic computation, only different

The idea behind Lexicalism is that while the interpretation of morphemes in syntactic structure is fixed by general rules, lexical combination of morphemes within words can have special compositional meaning—or no meaning at all, if some structural combination of morphemes is interpreted as if it were a monomorphemic root. Again, the important intuition behind this idea is that derived words fall into a class with roots, as opposed to phrasal compositions from words, when it comes to determining the relation between structure and meaning.

In the paper, "'Cat' as a phrasal idiom" (Marantz in preparation), I argue that are no special structure/meaning correspondences **anywhere**, neither within words nor within phrases (thus I support Construction Grammar (see, e.g., Goldberg 1995) in the claim that structures carry meaning, but I deny the major assumption of Construction Grammar that such meanings may be structure-specific, rather than general for a language and generally universal—see also Marantz 1992). What you see is what you get; i.e., if the morphophonology justifies decomposition into a complex structure of terminal nodes, the syntax must create this structure and the structure must be interpreted in the regular way for such constructions (with of course the possibility that roots in the construction might have special meanings in the context of (elements of) the construction).

Thus, for example, "transmission" can't mean what "blick" could mean and "kick the bucket" can't mean "die" (cf. Ruwet 1991 and Nunberg et al. 1994). Nouns like "transmission," "ignition," and "administration" carry the semantic implication of their internal structure, which includes an aspectual pre-verb, a verbal stem, and a nominalizing suffix. If these words refer to things, then these things should be for accomplishing something—and this is in fact the case. As has been pointed out by many linguists, "die" does not have the same aspectual properties as "kick the bucket," which itself carries the semantic implications of a transitive verb phrase with a definite direct object (and thus "kick the bucket" is aspectually similar to "pass away," whereas "die" is more like "jump" or, perhaps, "fall"). So one can say, "he was dying for three weeks before the end," but not, "*he was kicking the bucket for three weeks...."

Whether or not it is correct that all structural combination of morphemes are interpreted regularly, without exception, what's crucial here is that no one has shown or even tried to argue that words have special structure/meaning correspondences in some sense that phrasal idioms don't. That is, I would like to insist that neither phrasal idioms nor derived words have special structure/meaning correspondences. However, it is sufficient that this issue of special structure/meaning correspondences doesn't pick out the Word. The same issue arises for phrasal idioms.

What about the intuition behind lexicalism, that words are special? I think this intuition results from the mistaking the role of roots in the language for the role of Words. Things with special

meaning are roots. Generally (or, often), there's one root/Word. The functional categories that attach to roots in Words often include boundaries that separate domains of special meaning. So Words often are islands of special meaning, and Words are usually also identified by their root content, where the roots are the items subject to special contextual meanings.

3. "Remarks on Nominalization" kills lexicalism to death

Chomsky's "Remarks on Nominalization" (1970) is often identified as the birthplace of Lexicalism. But what was "Remarks" really about?—or to put the question another way, what's the connection between remarks on nominalization and X-bar theory, which was also introduced in that paper?

Deriving nominalizations from sentences—e.g., (12c) from (12a)—was an attempt to preserve the distributional definition of grammatical categories. Nominalized verbs threatened the distributional characterization of categories since they seem to share some distributional properties with verbs—the ability to take complements and subjects, for example—while sharing other (e.g., morphological) distributional properties with nouns. If nominalized verbs were in fact verbs in the categorial component of language, then their distribution would be unexceptional. Maintaining a strict correspondence between distribution and meaning implied that "N" and "V" need not have any essential internal properties. N's were elements that shared distribution, and as a result shared meaning. NPs containing nominalizations have the meaning of sentences, as predicted by the transformational analysis, or so the argument went.

(12)
a. **that John destroyed the city**
b. *that the city destroyed
c. **John's destruction of the city**
d. the city's destruction
e. John's destroying the city

The arguments against deriving nominalizations from sentences were fairly well-known and straightforward by the time the Chomsky wrote "Remarks." He actually barely points to them.

Crucial for Chomsky are the consequences of giving up the distributional definition of grammatical categories. If both Ns and Vs can have complements, and have the head/complement relation interpreted semantically in the same way, then N and V must be distinguished by some internal property, i.e., some feature.

X-bar theory says that, essentially, all the "lexical" grammatical categories have the *same* distribution, taking a complement to form an X', which takes a specifier to yield X-max: the categories are distinguished (only) by their internal features. Differences and cross-categorical similarities between categories are keyed to these features. Before "Remarks," while phones (in structuralist phonological theories) might be grouped into the same category (phoneme) when they were in complementary distribution, words were grouped into the same grammatical category (N, V, Adj) when they *shared* distribution. After the introduction of X-bar theory, lexical categories, like phonemes in contemporary phonological theory, are identified and distinguished by their internal features (e.g., what emerged eventually as the category features +/-N, +/-V).

The wrong notion of what "Remarks" is about is exemplified by this quote from Spencer (1991, p. 69): "Chomsky argued that transformations should capture regular correspondences between linguistic form, and that idiosyncratic information belonged in the lexicon.... derived nominalizations are morphologically, syntactically and semantically idiosyncratic...." Spencer presents an interestingly contrived reading of "Remarks," since the paper is mostly about the *systematic* syntactic and semantic properties of nominalizations, not their idiosyncratic properties, and about why these systematic properties would not follow from deriving nominalizations from sentences transformationally. It's very difficult to argue anything from idiosyncrasies—one argues from systematic differences.

What Chomsky really discussed in "Remarks" is summarized by this quote, Chomsky (1970, p. 17): "We might extend the base rules to accommodate the derived nominal directly (I will refer to this as the 'lexicalist position'), thus simplifying the transformational component; or alternatively, we might simplify the base structures, excluding these forms [the nominalizations], and derive them by some extension of the transformational apparatus (the 'transformational position')." Note that the crucial issue here is about extending the base rules (i.e., allowing N's to take comple-

ments) rather than adding operations to a place called "the lexicon." Chomsky proposes no special "lexical rules" or special lexical structure/meaning correspondences in his "Remarks." The "idiosyncrasy" of nominalizations is relevant strictly to the argument against deriving nominalizations from sentences; what's idiosyncratic is the relationship between the nominalizations and any "sentence" that they might be derived from. Within then standard generative theories with deep structure interpretation, the lack of semantic equivalence between nominalizations and their "corresponding" sentences was crucial.

We may up-date Chomsky's "Remarks" theory into contemporary Bare Phrase Structure (Chomsky 1995) terms: Nominalizations like "destruction" and "growth" in (12c, 13d) (as opposed to -*ing* gerunds) are never "verbs" at any stage in the derivation, and thus DPs like those in (12c, 13d) are not transformationally related to sentences like (12a, 13a,b). Roots like √DESTROY and √GROW (to borrow notation from Pesetsky 1995) are category neutral, neutral between N and V. When the roots are placed in a nominal environment, the result is a "nominalization"; when the roots are placed in a verbal environment, they become verbs.

(13) a. **that John grows tomatoes**
b. that tomatoes grow
c. * **John's growth of tomatoes**
d. **the tomatoes' growth**
e. John's growing tomatoes
f. tomatoes' growing (there would surprise me)

For completeness sake, and for an extension of Chomsky's argument below, I include a third class of roots, that of √BREAK, which show nominalizations that take no arguments, not even the argument corresponding to the intransitive subject of the verbal use of the root.

(14) a. that John breaks the glass
b. that the glass breaks
c. * John's break of the glass
d. * the glass's break
e. * the break of the glass
f. the break in the glass

For Chomsky, what explains the *systematic* behavior of nominalizations, as opposed to the behavior of verbs in sentences, is that while certain operations cut across N-headed and V-headed phrases (e.g., NP-movement in passivization and in “the city’s destruction *t*”), certain syntactic structures require the verbal environment. In particular, the agent of transitive “grow” in (13a) is not an argument of the root √GROW but rather a type of causative agent projected only in a verbal environment (as is the causative subject of psych verbs like “amuse,” among others).

We might review quickly why the systematic asymmetry between nominalizations and sentences presents such an important empirical problem for syntactic theory, one that has nothing to do with any idiosyncratic properties of the roots and words involved. Verbs of the “grow” class are either transitive or intransitive (apparently unaccusative, since the semantic role of the transitive object shows up on the intransitive subject) but their nominalizations are only intransitive. Verbs of the “destroy” class present the mirror-image behavior: they are generally only transitive (see (12b)) but their nominalizations may be transitive or intransitive. Moreover, this paradoxical (from the derive-the-nominalizations-from-sentences point of view) behavior forms part of broad, general patterns and does not exemplify special properties of special words. So verbs with thematic properties similar to “destroy” resist the transitive/inchoative alternation and the impossibility of “John’s growth of tomatoes” reflects general constraints on the semantic role of “X” in “X’s N of Y” (see, e.g., Pesetsky 1995 for discussion).

The exact (semantic) categories for roots that predicts their varying behavior in nominal and verbal environments is not important here (although identifying these categories is of course essential to syntactic theory). The important point is that there are such categories, there aren’t too many of them, and roots can all be assigned to one or another category (or perhaps to multiple categories). There’s a further issue (we won’t discuss) of whether the categories reflect features of the roots themselves or rather features of functional nodes that serve as the context for the insertion of the roots. The classes in (15) owe much to Levin & Rappoport Hovav (1995).

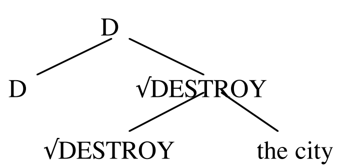
(15)

root	class
√DESTROY	change of state, not internally caused (so, implies external cause or agent)
√GROW	change of state, internally caused
√BREAK	result (of change of state)

Among the functional heads in whose environments roots become verbs (these may be "aspectual" in some sense), one, call it "v-1," projects an agent while another, call it "v-2," does not. These little "v's" could be different flavors of a single head, or perhaps there is some unified account that could have a single head optionally project an agent and thus cover both v-1 and v-2. The details don't matter to us here. Crucially, there's an apparent incompatibility between v-2 and verb roots that imply external cause or agent, like √DESTROY—see (12b). It is possible that a "middle" reading is forced when v-2 is combined with this class of roots ("These carefully constructed sets will destroy easily during the crucial earthquake scenes of the movie") or that such a combination never finds a semantic interpretation.

The tree in (16) displays the nominal use of the √DESTROY root—we assume that merging a root with "D" puts it into a nominal context—in a tree using a modified Bare Phrase Structure notation.

(16) the destruction of the city, the city's destruction



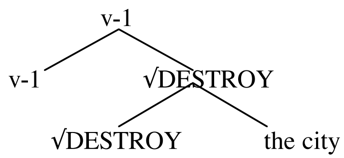
The trick to making this particular instantiation of Chomsky's analysis work is getting the agentive interpretation for the possessor of the DP in (16) without allowing the v-1 head to appear in this construction. If v-1 were involved in the agentive interpretation of "John's destruction of the city," then there would be no systematic way of ruling out "John's growth of tomatoes," since v-1

should be allowed to appear inside this nominalization as well. However, the general behavior of the possessors of NPs allows us to expect the possessor of an externally caused change of state to be (allowed to be) interpreted as the causer. Essentially, "possessors" of NPs may be interpreted in almost any kind of semantic relation with respect to the possessed NP that can easily be reconstructed from the meaning of the possessor and possessed by themselves (consider, e.g., "yesterday's destruction of the city"). It's crucial that the possessive "causer" of "John's destruction of the city" **not** be an agent of the sort projected by v-1, but rather just the sort of agent implied by an event with an external rather than an internal cause.

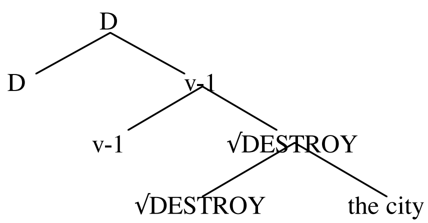
It is not particularly insightful in this context to point out that in sentences like, "The US destroyed the city," or "Neglect destroyed the city," the interpretation allows for agents or causes between the identified higher cause (the "US" and "neglect") and the actual physical destruction (really caused by armies, perhaps, in the first case, maybe vandals in the second). As in, "the city's destruction," the existence of the direct cause of the destruction in such examples must be implied by the root. The plausibility of the analysis here rests on what we have already tried to show: that "John" in "John's destruction of the city," and "John destroyed the city" might receive similar interpretations through different syntactic means, where the different sources of the interpretation can be independently supported.

The agent-projecting v-1, which serves to "verbalize" roots in its environment, occurs of course in the sentence in (17), but also in the *-ing* nominalization in (18). These *-ing* nominalizations are true "nominalizations" within the present framework; unlike "destruction" and "growth," for example, these *-ing* forms contain both a verbalizing (v-1) and a nominalizing environment (D) and so are really nouns made from verbs.

(17) John destroyed the city

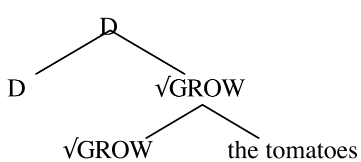


(18) John's destroying the city
(likely more heads between D and v-1, e.g., for *-ing*)



The crucial aspect of Chomsky's analysis is the observation that the root √GROW, unlike the root √DESTROY, is non-agentive. As a consequence, when √GROW is placed in the nominal environment as in (19), there is no agentive argument for the possessive phrase, and we get only "the growth of the tomatoes" or "the tomatoes' growth." However, in a verbal environment such as (20), a syntactically projected agent may appear, yielding "John grows tomatoes."

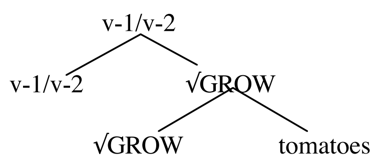
(19) growth of the tomatoes



Since the root in (19) refers to an internally caused change of state, the complement to the root will be interpreted as both the theme and the internal cause. The possessor of "growth of toma-

toes" may be interpreted as vaguely responsible for the growth of tomatoes, but there is no source for a "v-1 agent" interpretation. As an internally caused change of state, √GROW is incompatible with an external agent of the sort implied by √DESTROY.

(20) John grows tomatoes, tomatoes are growing



Chomsky solves the apparent paradox—of the obligatorily transitive "destroy" giving rise to alternatively transitive or intransitive "destruction" and the alternating "grow" yielding obligatorily intransitive "growth"—by having the agent of "grow" restricted to projection in the verbal environment while allowing that the agent of "destroy" is somehow implied by the root. Still, the root of √GROW, naming an internally caused change of state, implies a theme, which shows up as the object of both verbal "grow" and nominal "growth." It appears as if the root √BREAK in (14) names an end state, not an event of change of state. The verbal environment will yield, syntactically, a change of state and consequently a theme, plus optionally an external agent (if v-1 is chosen)—see (14a-b). The nominal form names the end-state, a "break," and takes no complements (see (14c-f)).

Chomsky's argument against the lexicon is quite straightforward. If we derived words in the lexicon, we would derive transitive "grow" there and nothing would prevent us from also deriving the nominalization "growth" with transitive meaning. The only thing that could rule out transitive causative "growth," then, would be some stipulation, such as, "don't make nominalizations from verbs that are causatives of change of state verbs with internal causers." However, the impossibility of causative "growth" follows directly if derivational morphology is syntactic, rather than lexical, and if the only structural source of agents is a head (v-1) that verbalizes a root in its context.

I believe Chomsky's argument from nominalizations to be a knock-out blow against the generative lexicon. However, a natural response to this argument might be to attempt to limit its sweep. Well, one might argue, *agents* of some sorts are in fact projected syntactically, and are not actually arguments of some of the verbs with which they appear in the syntax. So causative "grow" is not, in fact, lexical. But nominalizations (and adjectival passives, etc.) are still lexical. Some derivation is lexical, some (like the derivation of causative "grow") is syntactic.

This counter-argument is, of course, without force unless it is accompanied by some independent characterization of "lexical," i.e., some notion of what would correlate with the derivational processes that are lexical as opposed to syntactic. Everyone will agree that there are different domains in grammar; we saw above, for example, that syntactic domains determine the possible environmental triggers for "special meanings" in idioms. As diagrammed above (16, 18), there's a real (syntactic) sense in which "destruction" is smaller than "destroying," with the latter including a verbalizing head lacking in the former. This difference should correlate with other differences, ones dependent on syntactic domains. But, in the case of nominalizations, what would correlate with the "lexical" derivation of "growth" and "destruction," if the lexical/syntactic dichotomy were real?

Chomsky's argument from "growth" can be made stronger, in that it may be extended as an argument against any notion that the lexicon correlates special sound and special meaning. Note that the root √RISE belongs to the √GROW class and/or the √BREAK class, as illustrated in (21-22). When elevators "rise," this is likely interpreted as in internally caused change of state. When I "raise" my glass, I think the interpretation favors no implication of an internal cause. However, in the context of construction equipment, I think one can say, "I raised the crane two floors," with the internal-cause reading preserved, paralleling, then, "I grew tomatoes."

(21) a. the elevator is **ris**ing [v-2]
b. John is **rais**ing his glass [v-1]

Note that "rise" has a special pronunciation in its transitive use, "raise"—in the context of v-1. As we would predict for a verb

of either the √GROW of √BREAK class, the transitive nominalization "raise" is not allowed, as in (22a) (I write this as "raise" rather than "rise," but under current assumptions, since v-1 doesn't appear inside these "nominalizations," the context for the special pronunciation of √RISE as "raise" is absent). On its √GROW-like internally caused reading, the intransitive nominal "rise" may take an argument, as in (22b). On its no-internal cause reading, the nominal "rise," like "break," takes no argument (22c). Of course the nominalization of the verbal use of √RISE/RAISE may be transitive, as in (22c).

(22) a. * John's raise of the glass [no v]
b. The elevator's rise to the top floor [no v]
c. ??the rise of the glass [no v]
d. John's raising of the glass [v-1]

Roots of course can take on special non-compositional meanings in particular environments. √RISE does take on special meaning in the context of v-1, a meaning not present in the context of v-2. In fact, the special meaning in (23a) is much like that of causative "grow"—"to raise animals" parallels "to grow plants."

(23) a. John raised a pig for bacon. [special meaning for RISE in context of v-1]
b. * The pig raised/rose for bacon. [special meaning absent without v-1]

Crucially, even though there is a special sound and a special meaning for √RISE in the environment of v-1, the special "raise" in (23) may not appear in nominalizations any more than the non-special "raise of glass" can in (22a)—see (24).

(24) *John's raise of the pig for bacon.

This discussion reveals a more general argument against the lexicon than that emerging from the consideration of "growth" alone: If the lexicon stores special sound and special meanings, and provides the locus for the correlation between special sound and special meaning, then causative "raise" with special sound (for the

causative of "rise") and special meaning ('raise animals') must be formed in the lexicon. But now there is no explanation for why the nominalization of causative "raise" with the special meaning (or non-special meaning) is impossible.

By dissolving the lexicon, we return directly to the issues that motivated lexical phonology and morphology in the first place: what are the domains for contextual allomorphy and contextual allosemy (special meanings in particular contexts)? The failure of lexicalism is simply the falsification of an attractive and reasonable hypothesis: that the "word" (in some sense) is a privileged domain in grammar.

It is important to note that I am not claiming that there are a priori reasons to reject the Lexicon or that the picture of grammar in (4) is conceptually superior to that in some version of Government-Binding theory married to lexical phonology and morphology. I will scream in agony if I read or hear anyone summarizing this paper as, "Marantz argues grammatical theory would be simpler without a lexicon," or, "the paper shows that Distributed Morphology, with its Vocabulary and Encyclopedia, is conceptually superior to Lexicalist theories." The failure of lexicalism was a noble empirical failure—it made false predictions. The question is not which theory is simpler or more pleasing; the question is which theory is right.

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